**Model 1**

**CS605A – Internet of Things (IoT)**

**Full Marks: 100**

**Time: 3 Hours**  
**Instructions:** Answer all questions. Internal choices are provided where applicable.

**Part 1 – Multiple Choice Questions (12 × 1 = 12 Marks)**

Choose the correct answer for each question:

1. What does the Internet of Things (IoT) primarily aim to achieve?  
   a) Bluetooth speakers  
   b) Cloud Computing  
   c) Word processors  
   d) Connecting physical objects to the internet
2. Which protocol is relevant to Future Internet Technologies in IoT?  
   a) IPv4  
   b) IPv6  
   c) FTP  
   d) SMTP
3. What is the primary goal of a Wireless Sensor Network (WSN)?  
   a) Play games  
   b) Store large data  
   c) Monitor and collect data from the environment  
   d) Improve web design
4. What defines a "Brownfield IoT" solution in industry?  
   a) A new IoT design from scratch  
   b) Use of IoT in agriculture  
   c) Integrating IoT into existing legacy systems  
   d) Creating smart cities
5. What is the focus of IoT Strategic Research and Innovation Directions?  
   a) Social media growth  
   b) Fewer sensors  
   c) Future IoT advancements  
   d) Offline devices
6. Which MAC protocol is designed specifically for low power consumption in WSNs?  
   a) ALOHA  
   b) S-MAC  
   c) TCP/IP  
   d) HTTP
7. Which of the following is a key feature of WSN communication?  
   a) Wired Ethernet  
   b) Centralized communication  
   c) Short-range wireless multi-hop communication  
   d) Infrared only
8. What is the role of routing protocols in WSNs?  
   a) Painting sensor nodes  
   b) Managing energy budgets  
   c) Finding optimal paths for data delivery  
   d) Encrypting data
9. What is the main goal of data aggregation in WSNs?  
   a) Increasing latency  
   b) Reducing data redundancy and saving energy  
   c) Boosting sensor brightness  
   d) Splitting the data packets
10. What is a primary privacy concern in the Internet of Things?  
    a) Slow processing  
    b) Device cost  
    c) Unauthorized access to personal data  
    d) Low battery life
11. What is the Smartie approach in IoT security?  
    a) High-cost hardware  
    b) Lightweight smart objects with user-defined data control policies  
    c) Offline operations  
    d) Monolithic systems
12. Which aspect is crucial to master for successful IoT business implementation?  
    a) Ignoring cloud costs  
    b) Limiting data analysis  
    c) Monetization and user experience  
    d) Reducing device size

**Part 2 – Short Answer Questions (5 × 5 = 25 Marks)**

Answer any **five** of the following:

1. What are the major types of wireless sensor networks? Illustrate with examples.
2. Explain the concept of sensor deployment, data aggregation, and dissemination in WSNs.
3. Differentiate between M2M and IoT in terms of architecture and scalability.
4. Explain the role of Raspberry Pi in smart home automation with a suitable example.
5. Describe the transition from M2M to IoT along with its design principles.
6. What are the common issues related to wireless medium access in IoT communication?
7. Write a note on Fog Computing and its relevance in IoT.

**Part 3 – Long Answer Questions (5 × 15 = 75 Marks)**

Answer any **five** of the following in detail:

1. Discuss the evolution from M2M to IoT with an architectural overview. Elaborate on the main design principles and required capabilities.
2. Explain the LEACH routing protocol in WSNs with the help of a diagram. How does it help in energy conservation?
3. Analyze the role of data aggregation in IoT-based smart cities. What security measures should be implemented for protecting aggregated data?
4. Explain how Big Data and data serialization create value in IoT. Compare JSON and XML as serialization formats.
5. Discuss the major privacy and security issues in IoT systems. Provide real-world examples to support your answer.
6. Explain the architecture of a smart healthcare system using IoT. Include technological components and benefits for providers and patients.
7. Describe the components of IoT architecture. Justify the importance of each with examples from real-world applications.

Let me know if you want this formatted into a downloadable PDF or need an answer key.